Exhaustive List of MIDI Tools, Applications, and Packages for Linux

This document provides a comprehensive overview of MIDI-related software available on Linux, covering core infrastructure, DAWs, sequencers, synthesizers, utilities, players, and other relevant tools.

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In-Depth Explanations and Workflows

Core MIDI Infrastructure

These are the foundational components that enable MIDI communication on Linux.

- **ALSA (Advanced Linux Sound Architecture):**
  - **Explanation:** The primary kernel-level sound system for Linux. It provides drivers for sound cards and a robust API for audio and MIDI applications. ALSA's sequencer API is crucial for software MIDI routing and event handling.
  - **Workflow Fit:** Essential for any MIDI setup on Linux. Applications directly interact with ALSA for MIDI input/output. If you're connecting a physical MIDI keyboard or interface, ALSA is what makes it visible to your software.
- **JACK Audio Connection Kit (JACK):**
  - **Explanation:** A professional low-latency audio server that allows different applications to connect to each other and to hardware. While primarily for audio, JACK also has robust MIDI capabilities, enabling complex routing between applications.
  - **Workflow Fit:** Ideal for professional audio production, live performance, or complex studio setups where you need to route MIDI (and audio) between multiple applications (e.g., a DAW, a software synth, and a MIDI controller application). It provides a central hub for connections.
- **`a2jmidid`:**
  - **Explanation:** A utility that bridges ALSA MIDI ports to the JACK MIDI system. This allows applications that only support ALSA MIDI to communicate with JACK-aware applications, and vice versa.
  - **Workflow Fit:** Used when you have a mix of ALSA-only and JACK-aware MIDI applications and need them to interact. For example, if your MIDI keyboard connects via ALSA, but your DAW prefers JACK MIDI, `a2jmidid` makes the connection possible.

Digital Audio Workstations (DAWs) with MIDI Support

These are comprehensive software environments for music production, offering recording, editing, mixing, and mastering capabilities, with strong MIDI integration.

- **Ardour:**

    - **Explanation:** A powerful, open-source, professional-grade DAW. It offers extensive multitrack audio and MIDI recording, editing, and mixing. Its MIDI capabilities include a piano roll editor, drum editor, and support for various MIDI controllers.
    - **Workflow Fit:** For serious musicians, producers, and audio engineers who need a full-featured studio environment. Ideal for composing, arranging, and producing tracks entirely within a single application, integrating both recorded audio and MIDI performances.
- **LMMS (Linux MultiMedia Studio):**
    - **Explanation:** A free and open-source DAW designed for composing music, creating sequences, and mixing. It includes built-in synthesizers, effects, and a user-friendly piano roll editor for detailed MIDI editing.
    - **Workflow Fit:** Excellent for electronic music production, beat-making, and general music composition. Its intuitive interface makes it suitable for beginners, while its features allow for complex arrangements.
- **Rosegarden:**
    - **Explanation:** A music composition and editing environment focused on MIDI sequencing and notation. It combines a MIDI sequencer with score editing capabilities, making it unique among Linux DAWs.
    - **Workflow Fit:** Perfect for composers, arrangers, and educators who work with traditional music notation. It allows you to input MIDI, see it as sheet music, and then refine both the performance and the score.
- **Bitwig Studio:**
    - **Explanation:** A commercial, cross-platform DAW known for its innovative workflow, modular design, and strong hardware integration. It offers advanced MIDI editing, MPE (MIDI Polyphonic Expression) support, and a flexible modulation system.
    - **Workflow Fit:** For modern electronic music producers and sound designers who value creative freedom, modularity, and deep sound manipulation. Its MPE support makes it suitable for expressive MIDI controllers.
- **Qtractor:**
    - **Explanation:** A full-featured multitrack audio and MIDI sequencer. It’s designed to be lightweight and efficient, providing a solid foundation for recording and arranging.
    - **Workflow Fit:** A good choice for users who need a stable and efficient DAW without excessive bells and whistles. Suitable for recording live MIDI performances and arranging them into songs.
- **REAPER:**
    - **Explanation:** A highly customizable and lightweight commercial DAW that runs exceptionally well on Linux. It supports a wide range of audio and MIDI hardware and software, including various plugin formats (LV2, VST, VST3).
    - **Workflow Fit:** For users who want a powerful, flexible, and affordable DAW that can be tailored to almost any workflow. Its extensibility makes it popular for both music production and audio

post-production.

MIDI Sequencers

Dedicated applications for creating, editing, and arranging MIDI data, often focusing on specific sequencing paradigms.

- **Midish:**
  - **Explanation:** A command-line MIDI sequencer and filter. It's designed for real-time performance and offers features like multiple MIDI device handling, filtering, routing, and standard MIDI file import/export.
  - **Workflow Fit:** For advanced users, live coders, or those who prefer a text-based, highly scriptable approach to MIDI sequencing and manipulation. Great for generative music or complex MIDI routing.
- **MidiEditor:**
  - **Explanation:** A graphical user interface (GUI) tool for editing, recording, and playing MIDI data. It allows users to open existing MIDI files, modify notes, velocities, and other MIDI events.
  - **Workflow Fit:** For detailed, visual editing of MIDI files. If you need to fine-tune individual notes, adjust timing, or correct mistakes in a MIDI performance, MidiEditor provides the necessary tools.
- **Non-Sequencer:**
  - **Explanation:** A real-time, pattern-based MIDI sequencer. It focuses on creating and chaining musical patterns, often used for live performance or generative music.
  - **Workflow Fit:** For electronic musicians and performers who want to build and trigger musical phrases and patterns in real-time.
- **QMidiArp:**
  - **Explanation:** An advanced MIDI arpeggiator, programmable step sequencer, and LFO (Low-Frequency Oscillator). It can generate complex melodic and rhythmic patterns from simple MIDI input.
  - **Workflow Fit:** For sound designers and electronic musicians looking to create intricate arpeggios, evolving sequences, or modulate MIDI parameters with LFOs.
- **Seq24:**
  - **Explanation:** A loop-based MIDI sequencer simplified for live performance. It allows users to create and trigger short MIDI loops, making it suitable for improvisation and live sets.
  - **Workflow Fit:** For live electronic music performance, DJing with MIDI, or quickly sketching out musical ideas in a loop-oriented fashion.
- **MusE:**
  - **Explanation:** A MIDI/audio sequencer that provides a comprehensive environment for recording, editing, and mixing both MIDI and audio tracks.

    - **Workflow Fit:** A solid choice for general-purpose MIDI and audio sequencing, offering a traditional DAW-like experience for composing and arranging.
- **Advanced Gtk+ Sequencer:**
    - **Explanation:** An audio sequencer featuring a piano roll, synth, and matrix editor. It provides a visual way to compose and arrange music.
    - **Workflow Fit:** For users who prefer a graphical interface for sequencing and want integrated synthesis capabilities.
- **HarmonySeq:**
    - **Explanation:** A live loop-based MIDI software sequencer. Similar to Seq24, it emphasizes real-time performance and loop manipulation.
    - **Workflow Fit:** Another option for live electronic music, improvisation, and creating dynamic, evolving musical structures.
- **Radium:**
    - **Explanation:** A unique graphic music-making environment that combines elements of module trackers and MIDI sequencers. It offers a vertical, tracker-style workflow with powerful MIDI capabilities.
    - **Workflow Fit:** For users who enjoy the tracker workflow or want a different approach to sequencing and composition, particularly for electronic and experimental music.

Software Synthesizers (Softsynths)

Applications that generate audio from MIDI signals, often requiring SoundFonts for instrument samples or using their own synthesis engines.

- **FluidSynth:**
    - **Explanation:** A free and open-source software synthesizer that processes MIDI signals and generates sound using SoundFonts (.sf2 files). It can be used as a standalone application or integrated into other software.
    - **Workflow Fit:** Essential for playing MIDI files or receiving MIDI input and producing audible sound without a physical synthesizer. Often used with a GUI frontend like QSynth. Great for general MIDI playback and basic sound generation.
- **TiMidity++:**
    - **Explanation:** Another software synthesizer that can play MIDI files without hardware, rendering to the sound card in real-time or saving to a file. It also requires SoundFonts or GUS patch files.
    - **Workflow Fit:** Similar to FluidSynth, used for MIDI playback and rendering. It’s a classic choice for playing MIDI files on Linux.
- **ZynAddSubFX:**
    - **Explanation:** A powerful open-source software synthesizer capable of generating a wide range of sounds using additive, subtractive, and FM synthesis. It’s highly versatile and can create

complex textures.
    - **Workflow Fit:** For sound designers, electronic musicians, and anyone who wants to create unique and complex sounds from scratch. Can be used as a standalone instrument or within a DAW.
- **Yoshimi:**
    - **Explanation:** A MIDI software synthesizer forked from ZynAddSubFX, offering similar capabilities with ongoing development.
    - **Workflow Fit:** An alternative to ZynAddSubFX, providing a robust and feature-rich software synthesizer for various musical styles.
- **Helm:**
    - **Explanation:** A free software synthesizer available as a standalone application or as an LV2/VST/VST3/AU plugin. It's known for its clean interface and powerful modulation capabilities.
    - **Workflow Fit:** A great all-around software synth for creating a wide variety of sounds, from classic analog emulations to modern digital textures. Its plugin format makes it easy to integrate into DAWs.
- **TyrellN6:**
    - **Explanation:** A free virtual analog synthesizer inspired by classic hardware synths. It delivers a warm, vintage sound.
    - **Workflow Fit:** For producers looking for classic analog synth sounds, particularly for genres like synthwave, retro electronic, or any style that benefits from a rich, warm analog character.
- **amSynth:**
    - **Explanation:** A two-oscillator software synthesizer with a subtractive synth topology, designed to emulate classic analog synthesizers.
    - **Workflow Fit:** A straightforward and effective subtractive synthesizer for creating basslines, leads, pads, and other common synth sounds.
- **Cardinal:**
    - **Explanation:** A virtual modular synthesizer plugin, based on VCV Rack. It allows users to connect virtual modules (oscillators, filters, effects, etc.) to create complex soundscapes and instruments.
    - **Workflow Fit:** For experimental musicians, sound designers, and those who enjoy the flexibility and open-ended nature of modular synthesis.
- **DIN Is Noise:**
    - **Explanation:** A unique sound synthesizer and musical instrument that focuses on generative and experimental sound creation.
    - **Workflow Fit:** For artists exploring ambient, drone, or experimental music, offering unconventional sound design possibilities.
- **SunVox:**

    - **Explanation:** A small, fast, and powerful modular synthesizer with a pattern-based sequencer. It combines elements of trackers and modular synths.
    - **Workflow Fit:** For mobile music production, chiptune, or anyone who enjoys a compact, efficient, and modular approach to synthesis and sequencing.
- **VCV Rack:**
    - **Explanation:** A virtual modular synthesizer where each module can be connected, allowing for endless sound design possibilities. It's a standalone application that can also integrate with DAWs via JACK.
    - **Workflow Fit:** Similar to Cardinal, but as a standalone application, it's a complete modular synthesis environment for deep sound exploration and complex patching.
- **Aeolus:**
    - **Explanation:** A pipe organ synthesizer, designed to emulate the sound of a real pipe organ.
    - **Workflow Fit:** For classical musicians, church music, or anyone needing realistic pipe organ sounds.
- **Dexed:**
    - **Explanation:** A synth that models the Yamaha DX7 synthesizer, famous for its FM synthesis sounds.
    - **Workflow Fit:** For producers looking for classic 80s FM synthesis sounds, such as electric pianos, bells, and metallic textures.
- **GrandOrgue:**
    - **Explanation:** Another pipe organ synthesizer, offering detailed emulation of various pipe organs.
    - **Workflow Fit:** Similar to Aeolus, providing high-quality pipe organ sounds for classical or sacred music.
- **Surge XT:**
    - **Explanation:** A hybrid synthesizer with a vast array of synthesis methods, filters, and effects. It's open-source and highly versatile.
    - **Workflow Fit:** A powerful and flexible synth for almost any genre, capable of creating everything from lush pads to aggressive leads and complex soundscapes.
- **Pianoteq:**
    - **Explanation:** A commercial digital physical modeling of pianos and related instruments. It doesn't use samples but mathematically models the instrument's physics for realistic sound.
    - **Workflow Fit:** For pianists and producers who demand the highest level of realism and expressiveness from their virtual pianos.
- **Gnaural:**

    - **Explanation:** A binaural beat and pink noise synthesizer, often used for relaxation, meditation, or focus.
    - **Workflow Fit:** For users interested in sound therapy, ambient soundscapes, or creating specific auditory environments.
- **Calf Studio Gear:**
    - **Explanation:** A suite of audio plugins that includes synthesizers like Calf Monosynth, Calf Organ, and Calf Wavetable, along with various effects.
    - **Workflow Fit:** Provides a collection of useful synthesizers and effects that can be integrated into DAWs for a complete sound design and mixing solution.

MIDI Utilities and Tools

Smaller, specialized applications and command-line tools for various MIDI-related tasks, from monitoring to file conversion.

- **Drumstick Libraries:**
    - **Explanation:** A collection of C++ libraries and applications built around the ALSA sequencer interface.
    - **Workflow Fit:**
        - **Drumstick Metronome:** A MIDI metronome with a Qt5 interface. Useful for practicing or recording with a consistent tempo.
        - **Drumstick MIDI Monitor:** Monitors events from MIDI ports or applications via the ALSA sequencer. Invaluable for debugging MIDI connections and understanding MIDI data flow.
        - **Drumstick MIDI File Player:** A multiplatform MIDI file player. Simple playback of MIDI files.
- **VMPK (Virtual MIDI Piano Keyboard):**
    - **Explanation:** A virtual MIDI piano keyboard that generates MIDI events using the computer's alphanumeric keyboard or mouse. It can send MIDI to any ALSA or JACK MIDI port.
    - **Workflow Fit:** Extremely useful when you don't have a physical MIDI keyboard. Allows you to input notes into a DAW or software synth using your computer keyboard. Also great for testing MIDI connections.
- **`aplaymidi`:**
    - **Explanation:** A command-line utility to play MIDI files to an ALSA MIDI port.
    - **Workflow Fit:** Quick and simple playback of MIDI files from the terminal, useful for scripting or testing.
- **`aconnect` / `aconnectgui`:**
    - **Explanation:** Command-line (`aconnect`) and GUI (`aconnectgui`) tools for connecting ALSA MIDI ports between applications and devices.
    - **Workflow Fit:** Essential for managing MIDI routing on ALSA. You can connect your MIDI keyboard to a software synth, or route MIDI from one application to another. `aconnectgui`

provides a visual patchbay.

- **`midi2midi` (from MIDI-utils):**
  - **Explanation:** A simple program that translates input MIDI notes or CC messages to other MIDI notes, CC messages, or Jack Transport commands.
  - **Workflow Fit:** For transforming MIDI data in real-time. For example, remapping notes, changing controller numbers, or triggering transport controls from MIDI messages.
- **Div's MIDI Utilities:** A collection of command-line tools for various MIDI tasks.
  - **`lsmidiins` / `lsmidiouts`:** List MIDI input and output ports.
  - **`playsmf` / `recordsmf`:** Simple MIDI file player and recorder.
  - **`dispmidi`:** Pretty-prints incoming MIDI messages for debugging.
  - **`sendmidi`:** Sends a single specified MIDI message.
  - **`alsamidicable`:** Linux-only utility to reconfigure MIDI connections between running programs.
  - **`midifile` / `normalizesmf`:** A C library for reading/writing Standard MIDI Files and a utility to normalize SMF.
  - **Workflow Fit:** These utilities are invaluable for scripting, debugging, and performing specific, low-level MIDI operations from the command line. They are often used by developers or advanced users for custom MIDI workflows.
- **`midicsv`:**
  - **Explanation:** Converts MIDI files to a human-readable CSV (Comma Separated Values) format and vice-versa, preserving all MIDI information.
  - **Workflow Fit:** Useful for analyzing MIDI file structure, making programmatic changes to MIDI data using text processing tools, or for version control of MIDI files.
- **`abcmidi`:**
  - **Explanation:** Converts ABC notation (a text-based music notation format) to MIDI and MIDI to ABC notation.
  - **Workflow Fit:** For musicians who prefer to write music in ABC notation or want to convert existing MIDI files into a text-based format for sharing or editing.
- **MIDI Controller (GTK app):**
  - **Explanation:** A GTK application with graphical sliders and buttons that send MIDI controller (CC) messages.
  - **Workflow Fit:** Provides a virtual MIDI controller interface when you don't have a physical one, allowing you to send continuous controller messages to software synthesizers or effects.
- **`rtmidi`:**
  - **Explanation:** A C++ library for real-time MIDI input/output.
  - **Workflow Fit:** Primarily for developers who want to build custom MIDI applications in C++ with low-latency performance.

- `fxload`:
  - **Explanation:** A utility for pushing firmware to certain MIDI devices, particularly those based on Cypress FX2 microcontrollers (e.g., some older M-Audio MIDISport interfaces).
  - **Workflow Fit:** Used for troubleshooting or setting up specific MIDI hardware that requires firmware loading on Linux.

MIDI Players

Software primarily designed for playing back MIDI files.

- **VLC Media Player:**
  - **Explanation:** A versatile media player that can play MIDI files when configured with the `vlc-plugin-fluidsynth` package and a SoundFont.
  - **Workflow Fit:** For general media consumption, if you already use VLC, it can serve as a convenient MIDI player.
- **Audacious:**
  - **Explanation:** A lightweight audio player with MIDI playback support.
  - **Workflow Fit:** A good choice for users who prefer a simple, efficient audio player that can also handle MIDI files.
- **DeaDBeeF:**
  - **Explanation:** An audio player that can play MIDI files via its WildMidi player plugin.
  - **Workflow Fit:** Another option for a versatile audio player with MIDI capabilities.
- **KMid:**
  - **Explanation:** A MIDI/Karaoke player for KDE desktop environments.
  - **Workflow Fit:** For KDE users who want a dedicated MIDI player with karaoke features.
- **WildMIDI:**
  - **Explanation:** An alternative to TiMidity for playing MIDI files, often used as a backend for other players.
  - **Workflow Fit:** A command-line MIDI player that can be integrated into scripts or used as a lightweight alternative for MIDI playback.

Other Relevant Software and Concepts

- **SoundFonts (.sf2 files):**
  - **Explanation:** Collections of instrument samples used by software synthesizers like FluidSynth and TiMidity++ to produce sound from MIDI data. MIDI files themselves only contain note and control data, not actual audio. SoundFonts provide the “voices.” Common packages include `fluid-soundfont-gm` and `freepats`.
  - **Workflow Fit:** Absolutely essential for hearing sound from MIDI files or software synthesizers that rely on sample-based synthesis. You’ll need to install and configure these with your chosen

softsynth.

- **TuxGuitar:**
  - **Explanation:** A multitrack guitar tablature editor and player that can open GuitarPro, PowerTab, and TablEdit files. While primarily for guitar, it works with MIDI for playback and export.
  - **Workflow Fit:** For guitarists and bassists who work with tablature and want to hear their compositions played back via MIDI.
- **MuseScore:**
  - **Explanation:** A cross-platform open-source music notation software that also handles MIDI input and output.
  - **Workflow Fit:** For composers, arrangers, and educators who prefer to work with traditional sheet music. You can input notes via MIDI, arrange them, and export to MIDI or print scores.
- **Python with MIDI libraries (`python-rtmidi`, `python-fluidsynth`):**
  - **Explanation:** Python libraries that allow programmatic control over MIDI input/output and interaction with FluidSynth.
  - **Workflow Fit:** For developers, researchers, or creative coders who want to build custom MIDI applications, generative music systems, or integrate MIDI into larger Python projects.
- **Audio Programming Languages (ChucK, Csound, SuperCollider, Faust, Sonic Pi):**
  - **Explanation:** These are specialized programming languages and environments designed for real-time audio synthesis, processing, and algorithmic composition. Most have robust MIDI integration.
  - **Workflow Fit:** For experimental musicians, sound artists, and researchers who want to explore algorithmic composition, create custom synthesizers, or perform live coding with MIDI input. They offer unparalleled flexibility for creating unique musical systems.

This comprehensive list should provide a solid starting point for anyone looking to work with MIDI on Linux, regardless of their skill level or specific musical goals.